

What is claimed is:

1. A prefabricated folding structure comprising:

a generally rectangular central core comprising a plurality of core walls, a  
5 core floor section connected to and extending between the core walls at a base of  
the core walls, and a core roof section connected to and over the core walls and  
over the core floor section; each of said core walls, core floor section and core  
roof section comprising a plurality of spaced metal channel beams having at least  
one flat side;

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a plurality of folding rooms attached to the central core; each folding room  
comprising a plurality of room wall members, a folding room floor section  
removably attached to and extending between the room walls at a base of the  
room walls and a folding room roof section removably attached to and  
15 extending over the room wall members and extending over the room floor section;  
each of the room wall members, the room floor section and the room roof section  
comprising a plurality of spaced metal channel beams having at least one flat side;

at least one said room floor section being pivotedly connected at one end  
20 thereof to said core floor section; at least one room roof section being  
pivotedly connected at one end thereof to said core roof section; said room wall  
members being removably attached to said room floor section and said room roof  
section; each room roof section being pivotedly connected to the core roof section  
on the same side of the central core as each room floor section is connected to the  
25 core floor section;

wherein each folding room floor section and each folding room roof  
section may be alternately detached from its room wall members and pivoted

inwardly toward said central core and positioned in close proximity to and substantially parallel to a corresponding core wall and thereby form a compact folded structure, or pivoted outwardly away from said central core to define a room adjacent to said central core when attached to its room wall members.

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2. The structure of claim 1 wherein the beams comprise steel.

3. The structure of claim 1 wherein the beams pivot around bolts.

10 4. The structure of claim 1 wherein the beams have a generally U-shaped cross-section with a wide flat side extending to opposite perpendicular edges.

5. The structure of claim 1 wherein the beams have a generally C-shaped cross-section with a wide flat side extending to opposite perpendicular edges having 15 perpendicularly inwardly positioned edge flanges.

6. The structure of claim 1 wherein adjacent beams are positioned with their respective wide flat sides in juxtaposition and said beams being attached together with a plurality of bolts and nuts.

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7. The structure of claim 1 wherein said core walls and said room wall members further comprise a plurality of spaced metal channel studs having at least one flat side.

25 8. The structure of claim 1 wherein said core roof section comprises a plurality of rafters, said rafters comprising a pair of metal channel beams having at least one flat side, and which pair of beams are attached together at one end of each of said beams via at least one bolt and nut, one of said rafter beams being notched and the

other of said rafter beams being positioned within the notch such that said rafter beams are interlocking with one another.

9. The structure of claim 1 wherein said core roof section comprises a plurality of  
5        rafters, said rafters comprising a pair of metal channel beams having at least one flat side, and which pair of beams are attached together at one end of each of said beams via at least one bolt and nut, one of said rafter beams being notched and the other of said rafter beams being positioned within the notch such that said rafter beams are interlocking with one another; and each room roof section being  
10      pivotedly connected to the core roof section via an end of a rafter beam on the same side of the central core as each room floor section is connected to the core floor section.

10. The structure of claim 9 wherein the core roof section comprises a plurality of  
15      further comprises a plurality of metal channel core roof section supports, each one of said core roof section supports being positioned within a notch in one of the rafters and attached to said rafter via at least one bolt and nut such that said supports and said rafter beams are interlocking with one another.

20      11. The structure of claim 9 wherein each room roof section comprises a plurality of metal channel room roof section supports, each room roof section being pivotedly connected to the core roof section by pivotally connecting each of the room roof section supports by a bolt and nut to one of said rafter beams.

25      12. A multistory prefabricated folding structure comprising:  
                a generally rectangular central core comprising a plurality of core walls, a core floor section connected to and extending between the core walls at a base of the core walls, and a core roof section connected to and over the core walls and

over the core floor section; each of said core walls, core floor section and core roof section comprising a plurality of spaced metal channel beams having at least one flat side;

- 5        a plurality of folding rooms attached to the central core; each folding room comprising a plurality of room wall members, a folding room floor section removably attached to and extending between the room walls at a base of the room walls and a folding room roof section removably attached to and extending over the room wall members and extending over the room floor section;
- 10      each of the room wall members, the room floor section and the room roof section comprising a plurality of spaced metal channel beams having at least one flat side;

- at least one said room floor section being pivotedly connected at one end thereof to said core floor section; at least said one room roof section being  
15      pivotedly connected at one end thereof to said core roof section; said room wall members being removably attached to said room floor section and said room roof section; each room roof section being pivotedly connected to the core roof section on the same side of the central core as each room floor section is connected to the core floor section;

- 20        a sub-core attached under the central core, said sub-core comprising a generally rectangular central sub-core comprising a plurality of sub-core walls, a sub-core floor section connected to and extending between the sub-core walls at a base of the sub-core walls, each of said sub-core walls and the sub-core floor  
25      section comprising a plurality of spaced metal channel beams having at least one flat side;

a plurality of folding sub-rooms, one folding sub-room attached under one of the folding rooms and also attached to the central sub-core; each folding sub-room comprising a plurality of sub-room wall members, and a folding sub-room floor section removably attached to and extending between the sub-room walls at

5 a base of the sub-room walls; each of the sub-room wall members and the sub-room floor section comprising a plurality of spaced metal channel beams having at least one flat side;

at least one said sub-room floor section being pivotedly connected at one  
10 end thereof to said sub-core floor section; said sub-room wall members being removably attached to said sub-room floor section;

wherein each folding room floor section and each folding room roof section may be alternately detached from its room wall members and pivoted  
15 inwardly toward said central core or central sub-core and positioned in close proximity to and substantially parallel to a corresponding core wall or sub-core wall and thereby form a compact folded structure, or pivoted outwardly away from said central core to define a room adjacent to said central core when attached to its room wall members;

20 wherein each folding sub-room floor section may be alternately detached from its sub-room wall members and pivoted inwardly toward said central sub-core and positioned in close proximity to and substantially parallel to a corresponding sub-core wall and thereby form a compact folded structure, or  
25 pivoted outwardly away from said central sub-core to define a room adjacent to said central sub-core when attached to its sub-room wall members.

13. The structure of claim 12 wherein the beams comprise steel.

14. The structure of claim 12 wherein the beams pivot around bolts.
15. The structure of claim 12 wherein the beams have a generally U-shaped cross-section with a wide flat side extending to opposite perpendicular edges.  
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16. The structure of claim 12 wherein the beams have a generally C-shaped cross-section with a wide flat side extending to opposite perpendicular edges having perpendicularly inwardly positioned edge flanges.  
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17. The structure of claim 12 wherein adjacent beams are positioned with their respective wide flat sides in juxtaposition and said beams being attached together with a plurality of bolts and nuts.
18. The structure of claim 12 wherein said core walls, room wall members, sub-core walls and sub-room wall members further comprise a plurality of spaced metal channel studs having at least one flat side.  
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19. The structure of claim 12 wherein said core roof section comprises a plurality of rafters, said rafters comprising a pair of metal channel beams having at least one flat side, and which pair of beams are attached together at one end of each of said beams via at least one bolt and nut, one of said rafter beams being notched and the other of said rafter beams being positioned within the notch such that said rafter beams are interlocking with one another.  
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20. The structure of claim 12 wherein said core roof section comprises a plurality of rafters, said rafters comprising a pair of metal channel beams having at least one flat side, and which pair of beams are attached together at one end of each of  
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said beams via at least one bolt and nut, one of said rafter beams being notched and the other of said rafter beams being positioned within the notch such that said rafter beams are interlocking with one another; and each room roof section being pivotedly connected to the core roof section via an end of a rafter beam on the 5 same side of the central core as each room floor section is connected to the core floor section.

21. The structure of claim 20 wherein the core roof section further comprises a plurality of metal channel core roof section supports, each one of said core roof 10 section supports being positioned within a notch in one of the rafters and attached to said rafter via at least one bolt and nut such that said supports and said rafter beams are interlocking with one another.

22. The structure of claim 20 wherein each room roof section comprises a plurality of metal channel room roof section supports, each room roof section being pivotedly connected to the core roof section by pivotally connecting each of 15 the room roof section supports by a bolt and nut to one of said rafter beams.

23. A three-story prefabricated folding structure comprising:  
20           a generally rectangular central core comprising a plurality of core walls, a core floor section connected to and extending between the core walls at a base of the core walls, and a core roof section connected to and over the core walls and over the core floor section; each of said core walls, core floor section and core roof section comprising a plurality of spaced metal channel beams having at least 25 one flat side;

                  a plurality of folding rooms attached to the central core; each folding room comprising a plurality of room wall members, a folding room floor section

removably attached to and extending between the room walls at a base of the room walls and a folding a room roof section removably attached to and extending over the room wall members and extending over the room floor section; each of the room wall members, the room floor section and the room roof section  
5 comprising a plurality of spaced metal channel beams having at least one flat side;

at least one said room floor section being pivotedly connected at one end thereof to said core floor section; at least said one room roof section being pivotedly connected at one end thereof to said core roof section; said room wall  
10 members being removably attached to said room floor section and said room roof section; each room roof section being pivotedly connected to the core roof section on the same side of the central core as each room floor section is connected to the core floor section;  
15 a sub-core attached under the central core, said sub-core comprising a generally rectangular central sub-core comprising a plurality of sub-core walls, a sub-core floor section connected to and extending between the sub-core walls at a base of the sub-core walls, each of said sub-core walls and the sub-core floor section comprising a plurality of spaced metal channel beams having at least one  
20 flat side;

a plurality of folding sub-rooms, one folding sub-room attached under one of the folding rooms and also attached to the central sub-core; each folding sub-room comprising a plurality of sub-room wall members, and a folding sub-room  
25 floor section removably attached to and extending between the sub-room walls at a base of the sub-room walls; each of the sub-room wall members and the sub-room floor section comprising a plurality of spaced metal channel beams having at least one flat side;

at least one said sub-room floor section being pivotedly connected at one end thereof to said sub-core floor section; said sub-room wall members being removably attached to said sub-room floor section;

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wherein each folding room floor section and each folding room roof section may be alternately detached from its room wall members and pivoted inwardly toward said central core or central sub-core and positioned in close proximity to and substantially parallel to a corresponding core wall or sub-core  
10 wall and thereby form a compact folded structure, or pivoted outwardly away from said central core to define a room adjacent to said central core when attached to its room wall members;

wherein each folding sub-room floor section may be alternately detached  
15 from its sub-room wall members and pivoted inwardly toward said central sub-core and positioned in close proximity to and substantially parallel to a corresponding sub-core wall and thereby form a compact folded structure, or pivoted outwardly away from said central sub-core to define a room adjacent to said central sub-core when attached to its sub-room wall members;

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a second sub-core attached under the sub-core, said second sub-core comprising a generally rectangular central second sub-core comprising a plurality of second sub-core walls, a second sub-core floor section connected to and extending between the second sub-core walls at a base of the second sub-core  
25 walls, each of said second sub-core walls and the second sub-core floor section comprising a plurality of spaced metal channel beams having at least one flat side;

- a plurality of folding second sub-rooms, one folding second sub-room attached under one of the folding sub-rooms and also attached to the central second sub-core; each folding second sub-room comprising a plurality of second sub-room wall members, and a folding second sub-room floor section removably attached to and extending between the second sub-room walls at a base of the second sub-room walls; each of the second sub-room wall members and the second sub-room floor section comprising a plurality of spaced metal channel beams having at least one flat side;
- 5                   at least one said second sub-room floor section being pivotedly connected at one end thereof to said second sub-core floor section; said second sub-room wall members being removably attached to said second sub-room floor section;
- 10                  wherein each folding room floor section and each folding room roof section may be alternately detached from its room wall members and pivoted inwardly toward said central core or central sub-core and positioned in close proximity to and substantially parallel to a corresponding core wall or sub-core wall and thereby form a compact folded structure, or pivoted outwardly away from said central core to define a room adjacent to said central core when attached to its room wall members;
- 15                  wherein each folding sub-room floor section may be alternately detached from its sub-room wall members and pivoted inwardly toward said central sub-core and positioned in close proximity to and substantially parallel to a corresponding sub-core wall and thereby form a compact folded structure, or pivoted outwardly away from said central sub-core to define a room adjacent to said central sub-core when attached to its sub-room wall members;
- 20                  wherein each folding sub-room floor section may be alternately detached from its sub-room wall members and pivoted inwardly toward said central sub-core and positioned in close proximity to and substantially parallel to a corresponding sub-core wall and thereby form a compact folded structure, or pivoted outwardly away from said central sub-core to define a room adjacent to said central sub-core when attached to its sub-room wall members;
- 25                  wherein each folding sub-room floor section may be alternately detached from its sub-room wall members and pivoted inwardly toward said central sub-core and positioned in close proximity to and substantially parallel to a corresponding sub-core wall and thereby form a compact folded structure, or pivoted outwardly away from said central sub-core to define a room adjacent to said central sub-core when attached to its sub-room wall members;

wherein each folding second sub-room floor section may be alternately detached from its second sub-room wall members and pivoted inwardly toward said central second sub-core and positioned in close proximity to and substantially parallel to a corresponding second sub-core wall and thereby form a compact  
5 folded structure, or pivoted outwardly away from said central second sub-core to define a room adjacent to said central second sub-core when attached to its second sub-room wall members.

24. The structure of claim 23 wherein the beams comprise steel.  
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25. The structure of claim 23 wherein the beams pivot around bolts.

26. The structure of claim 23 wherein the beams have a generally U-shaped cross-section with a wide flat side extending to opposite perpendicular edges.  
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27. The structure of claim 23 wherein the beams have a generally C-shaped cross-section with a wide flat side extending to opposite perpendicular edges having perpendicularly inwardly positioned edge flanges.

20 28. The structure of claim 23 wherein adjacent beams are positioned with their respective wide flat sides in juxtaposition and said beams being attached together with a plurality of bolts and nuts.

25 29. The structure of claim 23 wherein said core walls, room wall members, sub-core walls, sub-room wall members, second sub-core walls, and second sub-room wall members further comprise a plurality of spaced metal channel studs having at least one flat side.

30. The structure of claim 23 wherein said core roof section comprises a plurality of rafters, said rafters comprising a pair of metal channel beams having at least one flat side, and which pair of beams are attached together at one end of each of said beams via at least one bolt and nut, one of said rafter beams being notched and the other of said rafter beams being positioned within the notch such that said rafter beams are interlocking with one another.

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31. The structure of claim 23 wherein said core roof section comprises a plurality of rafters, said rafters comprising a pair of metal channel beams having at least one flat side, and which pair of beams are attached together at one end of each of said beams via at least one bolt and nut, one of said rafter beams being notched and the other of said rafter beams being positioned within the notch such that said rafter beams are interlocking with one another; and each room roof section being pivotedly connected to the core roof section via an end of a rafter beam on the same side of the central core as each room floor section is connected to the core floor section.

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32. The structure of claim 31 wherein the core roof section further comprises a plurality of metal channel core roof section supports, each one of said core roof section supports being positioned within a notch in one of the rafters and attached to said rafter via at least one bolt and nut such that said supports and said rafter beams are interlocking with one another.

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33. The structure of claim 31 wherein each room roof section comprises a plurality of metal channel room roof section supports, each room roof section being pivotedly connected to the core roof section by pivotally connecting each of the room roof section supports by a bolt and nut to one of said rafter beams.

34. The structure of claim 31 wherein said core roof section comprises a plurality of rafters, said rafters comprising a pair of metal channel beams having at least one flat side, and which pair of beams are attached together at one end of each of said beams via at least one bolt and nut, one of said rafter beams being notched  
5 and the other of said rafter beams being positioned within the notch such that said rafter beams are interlocking with one another; and each room roof section being pivotedly connected to the core roof section via an end of a rafter beam on the same side of the central core as each room floor section is connected to the core floor section.

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35. The structure of claim 34 wherein the core roof section further comprises a plurality of metal channel core roof section supports, each one of said core roof section supports being positioned within a notch in one of the rafters and attached to said rafter via at least one bolt and nut such that said supports and said rafter  
15 beams are interlocking with one another.

36. The structure of claim 34 wherein each room roof section comprises a plurality of metal channel room roof section supports, each room roof section being pivotedly connected to the core roof section by pivotally connecting each of  
20 the room roof section supports by a bolt and nut to one of said rafter beams.

37. A process for forming a prefabricated folding structure comprising:

I. providing a trailer which comprises a rectangular framework, which framework  
25 is disposed on at least four wheels, an upper edge of the rectangular framework comprising a channel around a periphery of the framework;

- II. forming a habitable structure on the trailer by erecting a generally rectangular central core comprising a plurality of core walls, a lowermost portion of each of the core walls being positioned within the channel of the trailer framework, a core floor section connected to and extending between the core walls at a base of the  
5 core walls, and a core roof section connected to and over the core walls and over the core floor section; each of said core walls, core floor section and core roof section comprising a plurality of spaced metal channel beams having at least one flat side;
- 10 attaching a plurality of folding rooms to the central core; each folding room comprising a plurality of room wall members, a folding room floor section removably attached to and extending between the room walls at a base of the room walls and a folding room roof section removably attached to and extending over the room wall members and extending over the room floor section;  
15 each of the room wall members, the room floor section and the room roof section comprising a plurality of spaced metal channel beams having at least one flat side;
- 20 pivotedly connecting at least one said room floor section at one end thereof to said core floor section; at least one room roof section being pivotedly connected at one end thereof to said core roof section; said room wall members being removably attached to said room floor section and said room roof section; each room roof section being pivotedly connected to the core roof section on the same side of the central core as each room floor section is connected to the core floor section;
- 25 wherein each folding room floor section and each folding room roof section may be alternately detached from its room wall members and pivoted inwardly toward said central core and positioned in close proximity to and substantially parallel to

a corresponding core wall and thereby form a compact folded structure, or pivoted outwardly away from said central core to define a room adjacent to said central core when attached to its room wall members.